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A comparitive & prospective analysis of unstable trochanteric fractures fixed with PFN and PFN AII

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Abstract
Introduction: Intertrochanteric (peritrochanteric) fractures include the fractures in the region extending from the extrascapular basilar neck region to the region along the lesser trochanter of femur. Usually occurs in the elderly age group as a result of low-Energy trauma such as accidental fall due to osteoporosis and poor bone quality but high velocity trauma in young individuals can also result in similar fracture. Epidemiological reports by (Gill esult JB, 2007) reported a life-time risk of hip fractures at 50 years of age as 5.6% for men and 20% for women. And, interestingly peritrochanteric fractures constitute around 34% of all hip fractures.
Aim of the study: The aim of the study is to compare and analyze the functional outcome of patients with Unstable Trochanteric fractures managed with Proximal Femoral Nailing Anti-rotation II (PFN AII) against Proximal Femoral Nailing (PFN)
Objective of the study: Comparative analysis of functional outcome in the management of unstable trochanteric fractures by Proximal Femoral Nailing Anti-rotation II (PFN AII) against Proximal Femoral Nailing (PFN).

Keywords: Septic arthritis, hip-joint, children

Introduction
Comparisons in the functional outcome will be made on the objectives such as intra operative time, blood loss, time for union, Hip range of motion, wound and local complications, Harris Hip Score.

Materials and methods
Aim of the study
The aim of the study is to compare and analyze the functional outcome of patients with Unstable Trochanteric fractures managed with Proximal Femoral Nailing Anti-rotation II (PFN A II) against Proximal Femoral Nailing (PFN)

Objective of the study
Comparative analysis of functional outcome in the management of unstable trochanteric fractures by Proximal Femoral Nailing Anti-Rotation II (PFN A II) against Proximal Femoral Nailing (PFN). Comparisons in the functional outcome will be made on the objectives such as intra operative time, blood loss, time for union, Hip Range of motion, wound and local complications, Harris Hip Score.

Design: Prospective study
Period: August 2020to September 2021, BIMS, Belgaum

Inclusion criteria
1. Age > 50 years
2. Both sexes
3. Cases of Unstable trochanteric fractures (Boyd and Griffin Type II, III, IV)
4. Closed fracture
5. Osteoporotic fractures (Singh index </= 3)

Exclusion criteria

1. Compound fractures
2. Stable trochanteric fractures (Boyd and Griffin type I, Evans stable type)
3. Patient with associated ipsilateral lower limb injuries hindering the postoperative weight bearing
4. Patients with severe OA knee
5. Patients having neurological co-morbidities
6. Non-ambulant patients

Results and Statistics

In this study, 20 cases of fracture Intertrochanteric Femur were included of these 10 patients were operated with PFN and the other10 patients were operated with PFN A II. Patients were followed up every 2 weeks till fracture united and thereafter at 3 Months, 6 months and 1 year. Clinically, tenderness at fracture Site, limb length discrepancy, range of movements, deformity were assessed at each follow up and a standard proforma for Harris Hip Score evaluated. The results were analyzed with Standard antero-posterior radiographs of the Hip. Clinical and Radiological signs of union were analyzed at each follow up. The Functional outcomes were analyzed using scoring system of HARRIS HIP SCORE.

Time taken for surgery

For the time taken for surgery, among 10 cases in PFNAII group operated patients the average time of surgery is 65.5 minutes and among those who were operated with PFN the average was 91.5 minutes as shown in Figure:

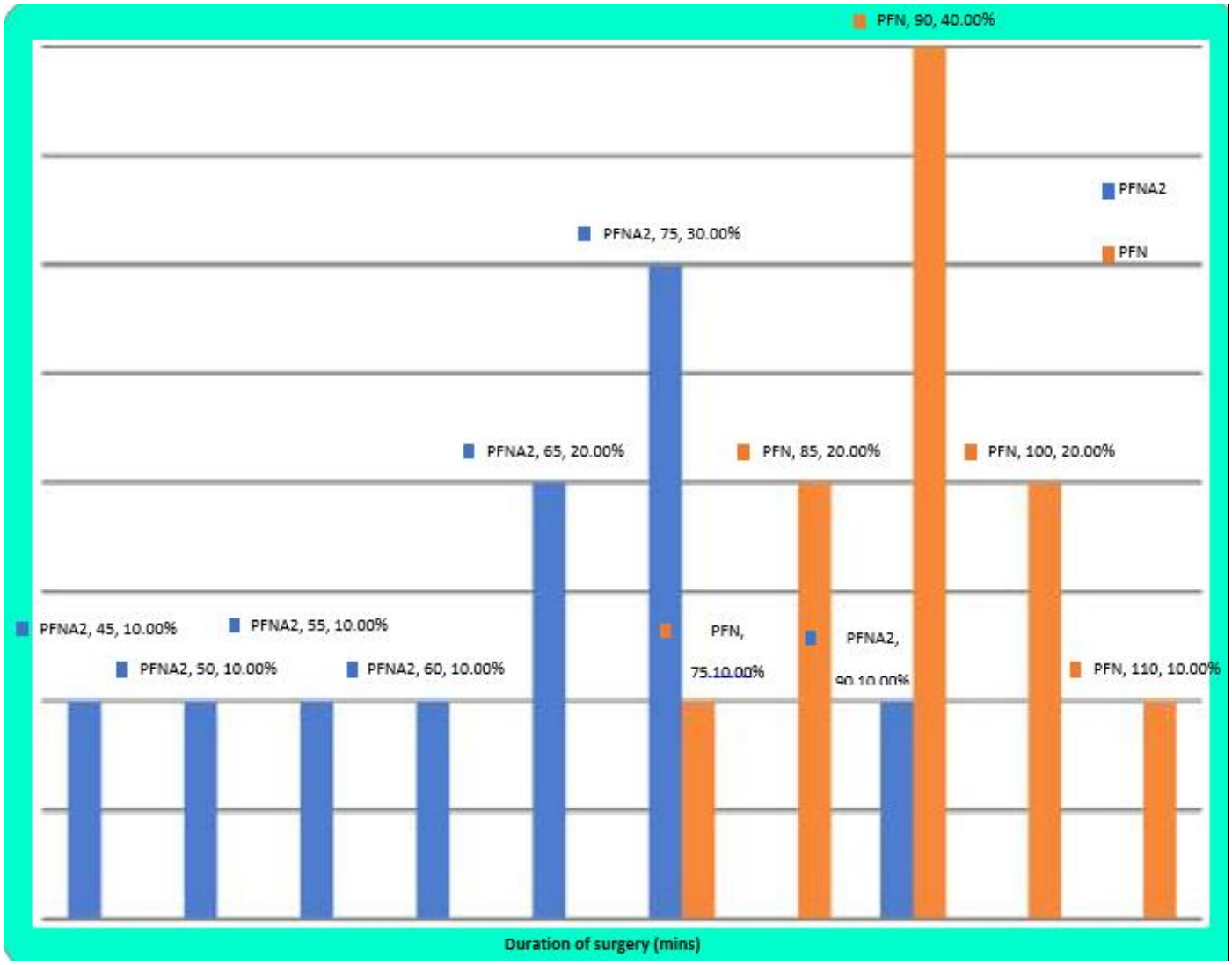

Fig 1: Distribution of Duration of surgery in minutes

Intra-operative blood loss

The average intra-operative blood loss in PFNAII patients was 238 ml and in PFN patients was 300 ml.

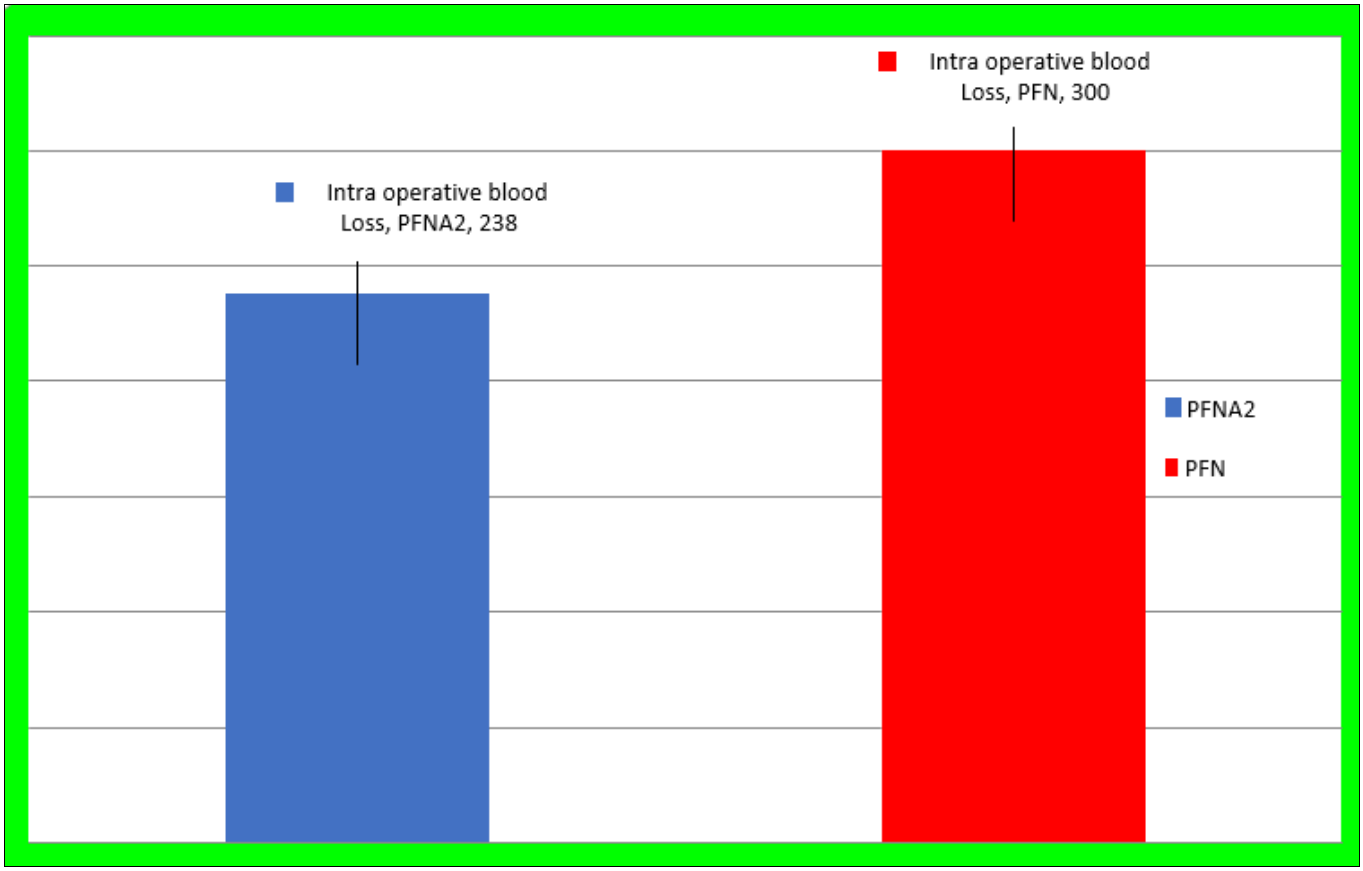

Fig 2: Distribution of patients based on Intraoperative blood loss (ml)

Union in weeks

Among the 20 patients the shortest time of union was 10weeks in PFN A II group and the longest was 20 weeks in PFN group. The average time taken for Union was12.4weeks in PFNAII group and 15.6 weeks in PFN group

Discussion

A number of problems exist when determining the best option for treatment for Intertrochanteric hip fractures. The Classification systems do not work well enough for preoperative planning, and the reduction criteria have not been well defined. With injury the surgeon treatment should first preserve life, Secondly save the limb, and finally maximize functional recovery.

PFN A II has been proven to be the implant with significant difference in terms of decreased Intra-operative blood loss (238ml) and less time of surgery (65.5 minutes) when compared to conventional PFN (300 ml and 91.5 minutes) respectively.

Also in regards to the union of fracture, PFN A II has superseded PFN with an average of 3 weeks earlier union (12.4 Weeks for PFN A II and 15.6 weeks in PFN).With regards to the Functional outcome measured by Harris Hip Score (HHS), at the end of 12 months in PFN A II treated patients, 4 patients (40%) had excellent outcome, 5 patients (50%) has good outcome and only 1 patient had fair outcome when compared to patients treated with PFN, in whom 2 (20%) patients had excellent outcome, 3 patients (30%) had good outcome and 5 (50%) patients had fair outcome.

Although there is a difference between the two groups with towards better functional results in patients treated with PFN A II, the difference is not statistically significant. This may be attributed to the limitations of the study such as lesser sample size and limited period of follow up.

Conclusion

Incidence of Unstable Intertrochanteric fractures is on the rise and is also compounded by various fracture dependent and independent factors (like Osteoporosis, renal failure etc.)

Proximal Femoral Nail (PFN) for the management of these fractures is a time tested implant that stood for a very long time. The recently introduced PFN A II (Proximal Femoral Nail Anti-rotation II) is found to be equal and sometimes better alternative for PFN in terms of lesser surgical time & faster union rate even though it has comparable functional outcome (as calculated by Harris Hip Score) with PFN.

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